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31 pages.

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FY-70

QUARTERLY REPORT

No. 1

31 August 1969

(1 June 1969 - 31 August 1969)

Prepared by:

[redacted]

25X1

Approved by:

5X1

[redacted]

Date: 26 Sept. 1969

31 Aug 69

PROGRAM OBJECTIVE

To investigate through studies, tests, and the fabrication and use of engineering breadboard equipment, new methods or devices which will further the state of the art in photographic techniques and practices as it pertains to improved extraction of collected intelligence information from photographic materials.

31 Aug 69

SUMMARY

1. The customer, by message 5148 dated 22 July 1969, has waived the requirement for Contract [ ] monthly technical reports. Report requirements for Contract [ ] currently consist of:

5X1
5X1

a. Quarterly Technical Reports

b. Period (four-week) Fiscal Reports

2. Subject Quarterly Report No. 1, FY-70, covers progress for the months of June, July, and August 1969. Detailed reports on approved, active PARs are found in Section II of this report.

SECTION I

INTRODUCTION

Approved For Release 2005/02/17 : CIA-RDP78B04770A001300020008-9

31 Aug 69

DISCUSSION

3. PAR Status. The table below lists all PARs in numerical order for ready reference, and the title (condensed in some cases) and status of each.

PAR	Title	Status
201	Travel and Liaison	Active
5X1 202/ 224	[redacted] Precision Enlarger/* 3X - 15X Enlarger	Completed/TWX 6351 dtd 21 Jan 66
203	Rapid Access Printer	Completed 4 Aug 65
204	Contact Chip Printer	Termination Rpt completed 27 Jan 65
205	Precision 4X Enlarger	Termination Rpt completed 27 Jan 65
206	Reversal Processing Study	Completed 21 May 65
207	Contact Printer Study	Completed 6 Apr 66
208	Non-Elec. Image Enhancement	Cancelled
209	Phosphor Viewer	Cancelled
210	Laminated Slides	Completed 4 Sep 64
211	Processing Effects Study	Completed 28 Oct 65
212	Color Acq. System Review	Completed 28 Oct 65
213	Color Reprod. Review	Completed 13 Aug 65
214	Roller Transport Processor (12-Inch)	Closed/TWX 7284 dtd 23 May 66
215	Roller Transport Processor (24-Inch)	Closed/TWX 7284 dtd 23 May 66
216	Laser Photographic Exposure	Completed 12 Feb 65
217	Optimization of Lasers	Completed 9 Nov 65
218	Autofocus Systems	Not to be submitted
219	Opt. vs Contact Pg. 1:1	Not to be submitted
220	Static Elec. Hold-Down	Disapproved

* Formerly called the Briefing Print Enlarger.

31 Aug 69

PAR	Title	Status
221	Lens Bench Manual	Not to be submitted
222	Auto Stereo Regstrn System	Completed 3 Mar 65
223	Monochr. Lens System	Disapproved
225	Micro-D Training Program	Terminated
226	Edge Trace Meas., Micro-D	Completed
227	Color Viewer	Disapproved
228	Vectograph Study	Not to be submitted
229	Optical Design Film Viewer	Not to be submitted
230	10X Color Lens	Disapproved
231	10-20-40X Color Lamphouse	Disapproved
232	Automated Edge Trace Device	Disapproved
233	Zoom (6X to 60X) Projection Lens	Terminated/TWX 7878 dtd 26 Jul 66
234	MTF Exposure Device	Disapproved
235	Automation Program Study	Disapproved
236	Film Disposal Rewind Unit	Disapproved
237	Briefing Aids	Completed 25 Jul 65
238	Equipment Installation	Closed/TWX 7284 dtd 23 May 66
239	Administration	Closed
240	Not Assigned	-
241	Not Assigned	-
242A	Color Demonstration Material	Completed 29 Mar 66
243A	[redacted] Precision Enlarger*	Completed 22 Sep 67
244	Spare Parts for RT Processors	Completed 21 Nov 67
245	BPE High Magnification Lens Sets	Completed 26 Mar 68
246	RT-12 and RT-24 Operational Improvements	Completed 25 Feb 68

25X1

* Formerly called the Briefing Print Enlarger.

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	PAR	Title	Status
	247	Base Spare Parts Kit	Completed 25 Nov 68
	248	BPE High-Magnification Lens Set	Completed 15 Nov 68
5X1	249	[redacted] Precision Enlarger Prototype (BPE) Operational Improvements and Maintenance	Completed 30 June 69
	249A	Photographic Enlarger Maintenance	Approved by message 4592, 30 June 69
5X1	250	[redacted] Precision Enlarger Mod II (Prototype)	Disapproved
	251	Image Enhancement Studies Using Ring Smear Techniques	Active
	252	Improvement of Precision Enlarger Fluid Injection System	Active
	253	Stereogram Printer Optical Development	Approved by message 4592, 30 June 69
	254	Technical/Consultative Contractor Services to Improve Production Methods at Customer's Facility	Approved by message 4592, 30 June 69

SECTION II

PAR PROGRESS

5X1

FY-70 Quarterly Report No. 1

PAR 249A
31 Aug 69

SUBJECT: Photographic Enlarger Maintenance

TASK/PROBLEM

1. Provide photographic enlarger maintenance at the customer's facility for two [redacted] Precision Enlargers (BPE) and four 10-20-40X Enlargers.

5X1

DISCUSSION

2. Contractor personnel visited the customer's facility during the weeks of 9 June 1969, 14 July 1969, and 18 August 1969. Activity during these three visits is discussed below.

3. June Visit. During June, monthly preventive maintenance (PM) was performed on the BPE, and two month PM on the 10-20-40X Enlargers (see Check Lists attached). The PM check on the BPE revealed that the actuator on the left limit switch for the vertical transport drive was broken. As a replacement for this type of item was not readily available in the area, it was decided to deliver and install a new one on the next visit to the customer's facility in July. On 10-20-40X Enlarger S/N 113, a film transport problem was encountered that was traced to a defective thyratron tube. This tube was replaced from customer spares, and the transport problem was eliminated. The PM check of the other 10-20-40X Enlargers indicated satisfactory operation.

4. July Visit. During July, monthly PM was performed on the BPE. No major discrepancies were noted; however, the actuator for the left vertical transport limit switch (found defective in June) was replaced (see BPE PM Check List for July).

5. August Visit:

a. During August, monthly PM was performed on the BPE and two month PM on the 10-20-40X Enlargers. Before contractor personnel left on this trip, the customer called and reported that 10-20-40X Enlarger S/N 113 was down for lack of parts. Six each of the parts required to put the enlarger in operation were delivered and installed. On the other three 10-20-40X Enlargers, the power supply units for the static bars were replaced. These had been found defective previously, had been reordered by the customer, and had just arrived.

b. The BPE had two problems during this visit: Broken flat springs on the left non-steering roller, and a broken spring connecting the solenoid to the piston shaft of the fluid pump. The non-steering roller was repaired using parts from the customer's Depot Kit. The fluid pump was repaired using the spring from a pump in the Depot Kit. The spring itself is not part of the Kit. Two springs that are available here will be delivered during the next trip.

PLANNED ACTIVITY

6. Contractor personnel will visit the customer's facility during September, October, and November to perform required PM.

PAR 249A
31 Aug 69

PREVENTIVE MAINTENANCE SCHEDULE CHECK LIST

5X1 [ ] PRECISION ENLARGER

5X1 Assigned to: [ ]

√	Item	Description

Daily Interval

√	1	Check the four indicator lamps on the sub-control panel.
√	2.1	Check closed-negative-gate interlock.
√	2.2	Check interlock that causes vertical transport slow speed.
√	2.3	Check interlock that disables negative transport after fluid injection.
√	2.4	Check operation of microswitch that functions when manual-film-movement knob is pushed in.
√	3.1	Check the indicator lamps for the two attenuator banks of the easel photometer.
	3.2	Check the meter scale illuminator lamp of the easel photometer.
	3.3	Check the antifatigue lamp in photo-multiplier tube housing.
	4	Clean the glass plates of the negative gate.

One-Week Interval

	1	Vacuum-clean the enlarger.
	2	Check, and if necessary, clean the objective lenses and all glass filters.
	3	Vacuum-clean the front surface of the easel.
√	4	Check the fiber optics for broken fibers.

√	Item	Description

One-Month Interval

√	1	Wax the steel rails of the lens ramp and of the easel.
√	2	Install new air filter in lamphouse.
√	3	Clean the nylon brushes of the fluid removal system.
√	4	Check all tubing and hoses for cracks and air leakage.
√	5	Check and, if necessary, clean the lenses of the condenser lens assemblies.

Six-Month Interval

	1.1	Make a photographic check on all six matching sets of objective and condenser lens assemblies.
	1.2	Be sure that film is tracking properly in both directions on the negative transport system.
	2	Check the timing belts of the film transport system, of the vertical drive system, and of the easel drive assembly for wear.

Checked by: [ ] Date 9 June 69

25X1

Changed 2/68

REMARKS:

The actuator on the left limit switch for the vertical transport was broken; a new one will be replaced on the next trip.

PREVENTIVE MAINTENANCE SCHEDULE CHECK LIST

TWO-MONTH INTERVAL

PRECISION ENLARGER, 10-20-40X

Assigned To: _____
Date: _____
Machine Serial No. _____

25X1

✔	Item	Description
	1	Film Transport
✓	1.1	Static Removal Unit
✓	1.2	Guide Roller Flanges
✓	1.3	Air Knives
✓	1.4	Belts and Pulleys
✓	1.5	Lubricate Bearings
	2	Easel and Stencil Assembly
✓	2.1	Easel
NA	2.2	Air Pressure System
	3	Illuminator
✓	3.1	Glass
✓	3.2	Lamps
✓	4	Negative Gate Interlock
✓	5	Lenses
✓	6	Stripper Plate
	7	Air Pressure System
✓	7.1	Air Lines
NA	7.2	Compressor Control
NA	7.3	Relief Valve
✓	7.4	Regulator
NA	7.5	Filter-Compressor
NA	7.6	Drain Storage Tank

✔	Item	Description
	8	Vacuum Pump Assembly
NA	8.1	Hoses and Couplings
NA	8.2	Pump
NA	8.3	Oil Level
	9	Lamp House Assembly
✓	9.1	Housing
✓	9.2	Filter (Photographic)
✓	9.3	Light Leaks
✓	9.4	Lamp House Blower
	10	Immersion System
✓	10.1	Ejectors
✓	10.2	Hoses and Couplings
✓	10.3	Blower
✓	10.4	Fluid Level
✓	11	Lamp House Control
✓	12	Analyzer
	13	Photo Check
	13.1	Resolution
	13.2	Uniformity
	14	General Inspection

25X1

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PREVENTIVE MAINTENANCE SCHEDULE CHECK LIST
TWO-MONTH INTERVAL

PRECISION ENLARGER, 10-20-40X

Assigned To: _____
Date: _____
Machine Serial

25X1

✔	Item	Description
	1	Film Transport
✓	1.1	Static Removal Unit
✓	1.2	Guide Roller Flanges
✓	1.3	Air Knives
✓	1.4	Belts and Pulleys
✓	1.5	Lubricate Bearings
	2	Easel and Stencil Assembly
✓	2.1	Easel
NA	2.2	Air Pressure System
	3	Illuminator
✓	3.1	Glass
✓	3.2	Lamps
✓	4	Negative Gate Interlock
✓	5	Lenses
✓	6	Stripper Plate
	7	Air Pressure System
✓	7.1	Air Lines
NA	7.2	Compressor Control
NA	7.3	Relief Valve
✓	7.4	Regulator
NA	7.5	Filter-Compressor
NA	7.6	Drain Storage Tank

✔	Item	Description
	8	Vacuum Pump Assembly
NA	8.1	Hoses and Couplings
NA	8.2	Pump
NA	8.3	Oil Level
	9	Lamp House Assembly
✓	9.1	Housing
✓	9.2	Filter (Photographic)
✓	9.3	Light Leaks
✓	9.4	Lamp House Blower
	10	Immersion System
✓	10.1	Ejectors
✓	10.2	Hoses and Couplings
✓	10.3	Blower
✓	10.4	Fluid Level
✓	11	Lamp House Control
✓	12	Analyzer
	13	Photo Check
	13.1	Resolution
	13.2	Uniformity
	14	General Inspection

25X1

REMARKS:

Defective Thyratron tube. After tube was replaced, film transport operated satisfactorily.

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PREVENTIVE MAINTENANCE SCHEDULE CHECK LIST

TWO-MONTH INTERVAL

PRECISION ENLARGER, 10-20-40X

Assigned To: _____

Date: _____

Machine Serial

25X1

✔	Item	Description
	1	Film Transport
✓	1.1	Static Removal Unit
✓	1.2	Guide Roller Flanges
✓	1.3	Air Knives
✓	1.4	Belts and Pulleys
✓	1.5	Lubricate Bearings
	2	Easel and Stencil Assembly
✓	2.1	Easel
NA	2.2	Air Pressure System
	3	Illuminator
✓	3.1	Glass
✓	3.2	Lamps
✓	4	Negative Gate Interlock
✓	5	Lenses
✓	6	Stripper Plate
	7	Air Pressure System
✓	7.1	Air Lines
NA	7.2	Compressor Control
NA	7.3	Relief Valve
✓	7.4	Regulator
NA	7.5	Filter-Compressor
NA	7.6	Drain Storage Tank

✔	Item	Description
	8	Vacuum Pump Assembly
NA	8.1	Hoses and Couplings
NA	8.2	Pump
NA	8.3	Oil Level
	9	Lamp House Assembly
✓	9.1	Housing
✓	9.2	Filter (Photographic)
✓	9.3	Light Leaks
✓	9.4	Lamp House Blower
	10	Immersion System
✓	10.1	Ejectors
✓	10.2	Hoses and Couplings
✓	10.3	Blower
✓	10.4	Fluid Level
✓	11	Lamp House Control
✓	12	Analyzer
	13	Photo Check
	13.1	Resolution
	13.2	Uniformity
	14	General Inspection

25X1

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PREVENTIVE MAINTENANCE SCHEDULE CHECK LIST
TWO-MONTH INTERVAL

PRECISION ENLARGER, 10-20-40X

Assigned
Date:
Machine S

25X1

✔	Item	Description
	1	Film Transport
✓	1.1	Static Removal Unit
✓	1.2	Guide Roller Flanges
✓	1.3	Air Knives
✓	1.4	Belts and Pulleys
✓	1.5	Lubricate Bearings
	2	Easel and Stencil Assembly
✓	2.1	Easel
NA	2.2	Air Pressure System
	3	Illuminator
✓	3.1	Glass
✓	3.2	Lamps
✓	4	Negative Gate Interlock
✓	5	Lenses
✓	6	Stripper Plate
	7	Air Pressure System
✓	7.1	Air Lines
NA	7.2	Compressor Control
NA	7.3	Relief Valve
✓	7.4	Regulator
NA	7.5	Filter-Compressor
NA	7.6	Drain Storage Tank

✔	Item	Description
	8	Vacuum Pump Assembly
NA	8.1	Hoses and Couplings
NA	8.2	Pump
NA	8.3	Oil Level
	9	Lamp House Assembly
✓	9.1	Housing
✓	9.2	Filter (Photographic)
✓	9.3	Light Leaks
✓	9.4	Lamp House Blower
	10	Immersion System
✓	10.1	Ejectors
✓	10.2	Hoses and Couplings
✓	10.3	Blower
✓	10.4	Fluid Level
✓	11	Lamp House Control
✓	12	Analyzer
	13	Photo Check
	13.1	Resolution
	13.2	Uniformity
	14	General Inspection

25X1

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PAR 3b9A
31 Aug 69

PREVENTIVE MAINTENANCE SCHEDULE CHECK LIST

25X1

[ ] PRECISION ENLARGER

25X1

Assigned to: _____

√	Item	Description

Daily Interval

√	1	Check the four indicator lamps on the sub-control panel.
√	2.1	Check closed-negative-gate interlock.
√	2.2	Check interlock that causes vertical transport slow speed.
√	2.3	Check interlock that disables negative transport after fluid injection.
√	2.4	Check operation of microswitch that functions when manual-film-movement knob is pushed in.
√	3.1	Check the indicator lamps for the two attenuator banks of the easel photometer.
√	3.2	Check the meter scale illuminator lamp of the easel photometer.
√	3.3	Check the antifatigue lamp in photo-multiplier tube housing.
√	4	Clean the glass plates of the negative gate.

One-Week Interval

	1	Vacuum-clean the enlarger.
	2	Check, and if necessary, clean the objective lenses and all glass filters.
	3	Vacuum-clean the front surface of the easel.
	4	Check the fiber optics for broken fibers.

√	Item	Description

One-Month Interval

√	1	Wax the steel rails of the lens ramp and of the easel.
√	2	Install new air filter in lamphouse.
√	3	Clean the nylon brushes of the fluid removal system.
√	4	Check all tubing and hoses for cracks and air leakage.
√	5	Check and, if necessary, clean the lenses of the condenser lens assemblies.

Six-Month Interval

	1.1	Make a photographic check on all six matching sets of objective and condenser lens assemblies.
	1.2	Be sure that film is tracking properly in both directions on the negative transport system.
	2	Check the timing belts of the film transport system, of the vertical drive system, and of the easel drive assembly for wear.

Checked by _____ Date 15 July 69

25X1

Changed 2/68

REMARKS:

The actuator on the left vertical transport limit switch was replaced.
(Found broken during last trip.)

GROUP 1
EXCLUDED FROM AUTOMATIC DOWNGRADING AND DECLASSIFICATION

SECRET

PAR 249A

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PREVENTIVE MAINTENANCE SCHEDULE CHECK LIST

TWO-MONTH INTERVAL

PRECISION ENLARGER, 10-20-40X

Assigned To

Date: _____

Machine Ser

25X1

✔	Item	Description
	1	Film Transport
✓	1.1	Static Removal Unit
✓	1.2	Guide Roller Flanges
✓	1.3	Air Knives
✓	1.4	Belts and Pulleys
✓	1.5	Lubricate Bearings
	2	Easel and Stencil Assembly
✓	2.1	Easel
NA	2.2	Air Pressure System
	3	Illuminator
✓	3.1	Glass
✓	3.2	Lamps
✓	4	Negative Gate Interlock
✓	5	Lenses
✓	6	Stripper Plate
	7	Air Pressure System
✓	7.1	Air Lines
NA	7.2	Compressor Control
NA	7.3	Relief Valve
✓	7.4	Regulator
NA	7.5	Filter-Compressor
NA	7.6	Drain Storage Tank

✔	Item	Description
	8	Vacuum Pump Assembly
NA	8.1	Hoses and Couplings
NA	8.2	Pump
NA	8.3	Oil Level
	9	Lamp House Assembly
✓	9.1	Housing
✓	9.2	Filter (Photographic)
✓	9.3	Light Leaks
✓	9.4	Lamp House Blower
	10	Immersion System
✓	10.1	Ejectors
✓	10.2	Hoses and Couplings
✓	10.3	Blower
✓	10.4	Fluid Level
✓	11	Lamp House Control
✓	12	Analyzer
	13	Photo Check
	13.1	Resolution
	13.2	Uniformity
	14	General Inspection

25X1

REMARKS:

Replaced power supply for static bars.

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PREVENTIVE MAINTENANCE SCHEDULE CHECK LIST

TWO-MONTH INTERVAL

PRECISION ENLARGER, 10-20-40X

Assigned To: _____

Date: _____

Machine Serial N

25X1

✔	Item	Description
	1	Film Transport
✓	1.1	Static Removal Unit
✓	1.2	Guide Roller Flanges
✓	1.3	Air Knives
✓	1.4	Belts and Pulleys
✓	1.5	Lubricate Bearings
	2	Easel and Stencil Assembly
✓	2.1	Easel
NA	2.2	Air Pressure System
	3	Illuminator
✓	3.1	Glass
✓	3.2	Lamps
✓	4	Negative Gate Interlock
✓	5	Lenses
✓	6	Stripper Plate
	7	Air Pressure System
✓	7.1	Air Lines
NA	7.2	Compressor Control
NA	7.3	Relief Valve
✓	7.4	Regulator
NA	7.5	Filter-Compressor
NA	7.6	Drain Storage Tank

✔	Item	Description
	8	Vacuum Pump Assembly
NA	8.1	Hoses and Couplings
NA	8.2	Pump
NA	8.3	Oil Level
	9	Lamp House Assembly
✓	9.1	Housing
✓	9.2	Filter (Photographic)
✓	9.3	Light Leaks
✓	9.4	Lamp House Blower
	10	Immersion System
✓	10.1	Ejectors
✓	10.2	Hoses and Couplings
✓	10.3	Blower
✓	10.4	Fluid Level
✓	11	Lamp House Control
✓	12	Analyzer
	13	Photo Check
	13.1	Resolution
	13.2	Uniformity
	14	General Inspection

25X1

REMARKS:

Delivered and installed new parts that customer had requested by phone for use in supply spindle.

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PREVENTIVE MAINTENANCE SCHEDULE CHECK LIST
TWO-MONTH INTERVAL

PRECISION ENLARGER, 10-20-40X

Assigned To: _____
Date: _____
Machine Serial No.

25X1

✔	Item	Description	✔	Item	Description
	1	Film Transport		8	Vacuum Pump Assembly
✓	1.1	Static Removal Unit	NA	8.1	Hoses and Couplings
✓	1.2	Guide Roller Flanges	NA	8.2	Pump
✓	1.3	Air Knives	NA	8.3	Oil Level
✓	1.4	Belts and Pulleys		9	Lamp House Assembly
✓	1.5	Lubricate Bearings	✓	9.1	Housing
	2	Easel and Stencil Assembly	✓	9.2	Filter (Photographic)
✓	2.1	Easel	✓	9.3	Light Leaks
NA	2.2	Air Pressure System	✓	9.4	Lamp House Blower
	3	Illuminator		10	Immersion System
✓	3.1	Glass	✓	10.1	Ejectors
✓	3.2	Lamps	✓	10.2	Hoses and Couplings
✓	4	Negative Gate Interlock	✓	10.3	Blower
✓	5	Lenses	✓	10.4	Fluid Level
✓	6	Stripper Plate	✓	11	Lamp House Control
	7	Air Pressure System	✓	12	Analyzer
✓	7.1	Air Lines		13	Photo Check
NA	7.2	Compressor Control		13.1	Resolution
NA	7.3	Relief Valve		13.2	Uniformity
✓	7.4	Regulator		14	General Inspection
NA	7.5	Filter-Compressor			
NA	7.6	Drain Storage Tank			

25X1

REMARKS:

Replaced power supply for static bars.

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PREVENTIVE MAINTENANCE SCHEDULE CHECK LIST
TWO-MONTH INTERVAL

PRECISION ENLARGER, 10-20-40X

Assigned To
Date:
Machine Ser

25X1

✔	Item	Description	✔	Item	Description
	1	Film Transport		8	Vacuum Pump Assembly
✓	1.1	Static Removal Unit	NA	8.1	Hoses and Couplings
✓	1.2	Guide Roller Flanges	NA	8.2	Pump
✓	1.3	Air Knives	NA	8.3	Oil Level
✓	1.4	Belts and Pulleys		9	Lamp House Assembly
✓	1.5	Lubricate Bearings	✓	9.1	Housing
	2	Easel and Stencil Assembly	✓	9.2	Filter (Photographic)
✓	2.1	Easel	✓	9.3	Light Leaks
NA	2.2	Air Pressure System	✓	9.4	Lamp House Blower
	3	Illuminator		10	Immersion System
✓	3.1	Glass	✓	10.1	Ejectors
✓	3.2	Lamps	✓	10.2	Hoses and Couplings
✓	4	Negative Gate Interlock	✓	10.3	Blower
✓	5	Lenses	✓	10.4	Fluid Level
✓	6	Stripper Plate	✓	11	Lamp House Control
	7	Air Pressure System	✓	12	Analyzer
✓	7.1	Air Lines		13	Photo Check
NA	7.2	Compressor Control		13.1	Resolution
NA	7.3	Relief Valve		13.2	Uniformity
✓	7.4	Regulator		14	General Inspection
NA	7.5	Filter-Compressor			
NA	7.6	Drain Storage Tank			

25X1

REMARKS:

Replaced power supply for static bars.

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SECRET

PAR 249A

31 Aug 69

PREVENTIVE MAINTENANCE SCHEDULE CHECK LIST

25X1

PRECISION ENLARGER

25X1

Assigned to:

√	Item	Description
		Daily Interval
√	1	Check the four indicator lamps on the sub-control panel.
√	2.1	Check closed-negative-gate interlock.
√	2.2	Check interlock that causes vertical transport slow speed.
√	2.3	Check interlock that disables negative transport after fluid injection.
√	2.4	Check operation of microswitch that functions when manual-film-movement knob is pushed in.
√	3.1	Check the indicator lamps for the two attenuator banks of the easel photometer.
	3.2	Check the meter scale illuminator lamp of the easel photometer.
	3.3	Check the antifatigue lamp in photo-multiplier tube housing.
√	4	Clean the glass plates of the negative gate.
		One-Week Interval
	1	Vacuum-clean the enlarger.
	2	Check, and if necessary, clean the objective lenses and all glass filters.
	3	Vacuum-clean the front surface of the easel.
√	4	Check the fiber optics for broken fibers.

√	Item	Description
		One-Month Interval
√	1	Wax the steel rails of the lens ramp and of the easel.
√	2	Install new air filter in lamphouse.
√	3	Clean the nylon brushes of the fluid removal system.
√	4	Check all tubing and hoses for cracks and air leakage.
√	5	Check and, if necessary, clean the lenses of the condenser lens assemblies.
		Six-Month Interval
	1.1	Make a photographic check on all six matching sets of objective and condenser lens assemblies.
	1.2	Be sure that film is tracking properly in both directions on the negative transport system.
	2	Check the timing belts of the film transport system, of the vertical drive system, and of the easel drive assembly for wear.

Checked by _____ Date 18 Aug 69

Changed 2/68

REMARKS:

1. The flat springs in the left non-steering roller were broken. Replaced from customer spares.
2. The flat spring that connects the solenoid to the piston shaft was broken on the fluid pump. Replaced from depot pump; will deliver a replacement next trip.

5X1

FY-70 Quarterly Report No. 1

PAR 251

31 Aug 69

SUBJECT: Image Enhancement Studies Using Ring Smear Techniques

TASK/PROBLEM

1. Design, fabricate, and mount a ring smear device on the BPE breadboard enlarger, and using this equipment:

a. Develop equipment necessary to hold enlarged product and ring smear mask in registration during subsequent printing.

b. Perform image enhancement on selected mission originals.

c. Train selected contractor and customer exploitation personnel in ring smear enhancement techniques.

d. Study operating parameters of ring smear technique with the goal of improving the method.

DISCUSSION

2. Introduction. The subject PAR was approved by customer message 3981 dated 9 June 1969. As reported in the June 1969 monthly report, effort during June consisted of preliminary planning, mainly in the area of establishing hardware specifications.

3. Progress and Current Status:

a. The preliminary studies of ring smear parameters and the construction of final test hardware are in progress. The first objective of preliminary studies has been to define hardware requirements; i.e., tilt plate thickness, parallelism of plate surfaces, and tilt angle range, etc. This objective has been met and the hardware design has been completed. As of this report, purchased parts have been received and drawings for other parts have been released to the shop for fabrication. It is expected that assembly of parts will begin in late September.

b. The second objective of the preliminary study is to investigate improved techniques of preparing enhanced images. Particular emphasis has been placed upon methods which offer faster turn-around

time in preparing the smeared mask and a reduction in the number of optical registrations required to produce the enhanced print. The method currently being worked on requires about four minutes to prepare the smeared mask, re-register with the aerial image on the enlarger, and expose an enhanced negative. Investigations are continuing to find a good combination of films and processing conditions which are well suited to this approach.

c. Other areas of the preliminary studies to be investigated during the next reporting period include a subjective evaluation of the amount of enhancement that is desirable, and the effect of enhancing various frequencies.

PLANNED ACTIVITY

4. Assemble final test hardware.
5. Start checkout of final test hardware.
6. Continue with preliminary studies for:
   a. Improved techniques.
   b. Selection of better films/processing.
   c. Subjective evaluation of the amount of enhancement required.
   d. Subjective evaluation of the enhancement at various frequencies.

SECRET

5X1

FY-70 Quarterly Report No. 1

PAR 252

31 Aug 69

SUBJECT: Improvement of the Precision Enlarger Fluid Injection System

TASK/PROBLEM

1. Develop, fabricate, test, and evaluate an improved fluid-injection-system breadboard that will be compatible with the fluid-gate requirements of both the [redacted] Precision Enlarger (BPE) and 10-20-40X Precision Enlargers.

5X1

INTRODUCTION

2. Background:

a. During the past few years, Precision Enlargers used in the field have experienced certain failures in the system used to inject refractive index matching fluid into the negative gate. These failures prompted the search for an improved system. As a result, a wide variety of fluid-moving methods were considered as well as the problem of controlling the fluid volume delivered.

b. The objectives of this PAR are: (1) to obtain a system that will be highly resistant to the chemical properties of commonly used fluids of the chlorinated hydrocarbon type, and (2) to provide rapid efficient delivery of fluid to the point of application.

DISCUSSION

3. Progress. Consideration was given to a variety of possible pump materials which would best meet the chemical resistant and efficient delivery objectives of the PAR. Delrin was selected. A search was then conducted for a commercially available pump made of Delrin. Because this search was unsuccessful, it was necessary to design a pump. This design, which follows the concept outlined in the original PAR and shown in Figure 1, was completed and released for fabrication. The necessary drive motor for the pump has been ordered.

PLANNED ACTIVITY

4. Complete fabrication of the breadboard pump system.
5. Initiate testing and evaluation activities.

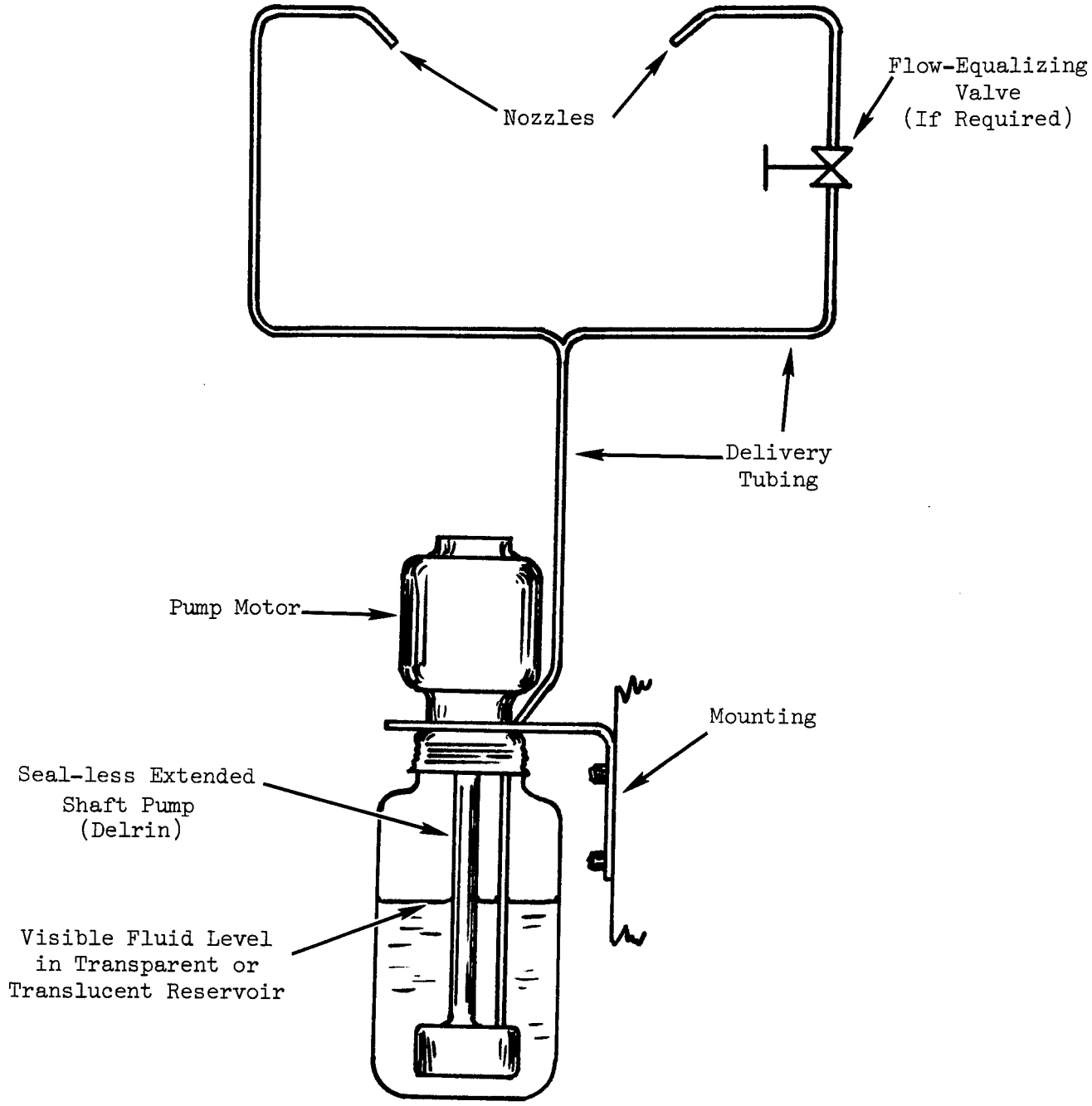

Figure 1. Centrifugal Pump System Concept

FY-70 Quarterly Report No. 1

PAR 253
31 Aug 69

SUBJECT: Stereogram Printer Optical Development

TASK/PROBLEM

1. Study and evaluate an optical system for the reproduction of a stereo-image pair in stereogram format. Fabricate necessary kluge equipment for conducting necessary photographic tests.

DISCUSSION

2. Introduction:

a. For maximum information retrieval from stereo mission material now being acquired, special complex and expensive stereo registration equipment has been developed. Although this equipment would permit comfortable stereo fusion for observers by scale matching and image rectification, its expense restricts its availability to a limited number of users.

b. The importance of making fuller use of currently available stereo materials has recently prompted consideration of combining the registration technique described above with a special optical printer system that could produce stereograms* in quantity. This approach, if successful, would make high-quality stereo views of selected targets readily available to PI's for use in low magnification, low-cost, desk-top stereoscopes.

c. It is the intent of this PAR to prove the feasibility of an optical system necessary to the concept of a stereogram enlarging printer.

d. Authorization to proceed on the subject PAR was received by customer message 4592, dated 30 June 1969.

3. Planning:

a. Effort on this project, now in the early planning stages, has involved three meetings with the customer and communication by messages, as indicated below:

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* Stereogram - A matched pre-aligned stereo pair readily capable of fusion by an observer using a simple stereo viewer.

Meeting Location	Date
Contractor's installation	9 July 1969
Contractor's installation	31 July 1969
Customer's installation	3 September 1969

Messages Transmitted	Date
Contractor to customer	12 August 1969
Customer to contractor	20 August 1969

b. During the above meetings, efforts were made to determine customer preferences with respect to design goals. Certain customer preferences were believed in one instance to set up two incompatible goals, as indicated below. This difficulty was partially resolved in the last of the meetings with the customer.

4. Progress:

a. First Meeting. On 9 July 1969, the customer's contract monitor for this PAR visited the contractor's facility to discuss the newly approved PAR. At the meeting, discussion covered the customer's preferred print-format size and the desk equipment currently used for stereo viewing (zoom 70 and 240 stereo-microscopes). This equipment, depending upon how it is set up, yields a practical low magnification of 3X. This appeared to fit nicely with the magnification range in which the contractor had proposed to work. In other words, should the design result in a working range of 5X to 10X, the minimum overall magnification of the printer system in combination with a 3X viewing system would be 15X. Assuming 5 cy/mm eyeball resolution, this would be adequate for examination of 75 cy/mm material, which is well below the 200 cy/mm design goal for this PAR.

b. Second Meeting:

(1) On 31 July 1969, another meeting was held at the contractor's facility. At this time, the customer requested the contractor to consider directing design effort toward lower system magnification, on the basis of a preferred print format size of 5 x 5 inch.

(2) During the meeting, it was established that the following design goals would best fulfill the customer's requirements as stated, and the customer expressed agreement with these goals:

(a) A minimum zoom magnification ratio of 2:1, the customer preferring a greater range, if possible.

(b) Minimum magnification of 2X, if possible. In other words, magnification zoom-variable from 2X to 4X is a minimum goal. A 2X to 5X or 2X to 6X range would be preferred. If the 2X minimum cannot be attained, then try for 2 1/2X or 3X minimum. If the minimum must be 3X or greater, it may be necessary to increase the image format area (see c. below).

(c) Print format to be 5 x 5 inches. If the minimum achievable magnification must be 3X or greater, this may be increased so that at least a 2 x 2 inch area can be covered at the object plane.

(d) Anamorphic zoom ratio to be 1:2. If this ratio presents undue difficulty, it may be possible to reduce this range. The anamorphic zoom should be arranged so that it works from unity magnification to less than unity; in other words, from 1.0 to 0.5X.

(e) The lens system should have image rotation capability that will permit 360-degree rotation in the image space.

(f) The lens system should be color corrected, with achromatization at 4500A, 5500A, and 6500A as suggested by the contractor.

(g) The project goal is to reproduce a minimum of 200 cy/mm, high contrast, from any position in the field of the object space throughout the magnification and anamorphic zoom ranges of the system.

(h) A condenser lens system is required to work with the lens. Present planning is to use a tungsten source of 300 watts or 500 watts for the testing phase of this PAR.

c. The above design goals were subsequently reviewed by the contractor's optical designers, and the following observations were transmitted to the customer by message on 12 August 1969:

(1) The decrease in minimum magnification from the originally proposed 5X to the new goal of 2X would increase the size of the object format to at least 2 x 2 inches. This increases substantially the difficulty of achieving a design to produce high-contrast resolution of 200 cy/mm at the original.

(2) Decreasing magnification will result in an increased focal-length system. Since the relative aperture must be maintained to yield the required resolution, the actual system aperture will be considerably enlarged. It is anticipated that this will increase the complexity and cost of fabricating the optical system.

(3) This message also requested information about the customer's long-term needs and his preference for resolution or field coverage. Knowledge about this preference was necessary to prevent the contractor from pursuing two incompatible goals.

d. With respect to the above problems, the customer, by return message on 20 August 1969, requested that further decisions on design goals be delayed until the next customer/contractor meeting around the beginning of September 1969.

e. Third Meeting. On 3 September 1968,* a meeting was held at the customer's facility. At this time, the contractor stated that he was designing toward the goals established at the 31 July 1969 meeting with the understanding that the magnification goal might be increased if necessary in order to achieve a design with good probability of producing the required resolution. With respect to the customer's preference (for resolution or field coverage), he stated that the resolution design goal of 200 cy/mm remained the overriding goal and that

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* Although this date is later than the cutoff date for this quarterly report and beyond the report period dates (1 June - 31 August 1969), this information was provided in the interest of completeness.

magnification could be increased, as necessary, to permit a workable design. A verbal request by the customer to have the contractor expand this study to include optical reduction systems was rejected by the contractor as being inconsistent with the goals of this PAR.

PLANNED ACTIVITY

5. Proceed with design and theoretical evaluation of an optical system formula which will be adequate for ultimate use in a Stereogram Optical Printer System.

6. When such a formula is achieved:

a. Meet with customer for Go No-Go decision on fabrication on or about 1 November 1969.

b. Start fabrication of the formula sample lens system.

c. Start design of a suitable optical condenser system to work with the printer lens.

d. Start design of a kluge printer breadboard to permit eventual testing of the formula sample lens system.

5X1

[redacted]

FY-70 Quarterly Report No. 1

PAR 254

31 Aug 69

SUBJECT: Technical/Consultative Contractor Services to Improve Production Methods at Customer's Facility

TASK/PROBLEM

1. Perform studies and conduct experimental investigations for improvement of production methods and techniques at NPIC that would:

a. Permit direct coupling into an intergrating National distribution plan, and

b. Increase production quality and efficiency.

2. Determine the changes in equipment, material, personnel and/or procedure that would be required to achieve the above.

3. Provide technical and/or consultative services, personnel training support, and samples of materials as available and appropriate to achieve the above.

DISCUSSION

4. Introduction

Activity on this project will include the following objectives:

a. Selection of materials and processes in combinations suitable for generating a color system with the highest quality and efficiency.

b. Integration of the above into a total color production system and formulation of formal procedures to cover each stage.

c. Evaluation and study of both black-and-white and color systems with regard to the incorporation of improved techniques and equipment.

d. Preparation and implementation of a training program to provide an interface between personnel at the customer's facility and the above systems.

5. Progress and Current Status:

a. Some initial work applicable to this PAR's area of interest has been done under another contract. This work has included investigations into various product/process combinations consistent with high quality and efficiency for the following requirements:

(1) Original positives.

(2) Dupe positives (1:1).

(3) Black-and-white positives (1:1) from the color positive original, via neg/pos or direct positive black-and-white products.

(4) 10X enlargement color prints (paper) via internegatives.

(5) 10X enlargement dupe prints via the color dupe positive or internegative.

b. A meeting was tentatively arranged with the customer at his facility during the week of 22 September 1969. Product/processes which can be used on the upcoming color task (color portion of [redacted] 25X1 will be displayed. This will be accomplished in an effort to present an approach for generating good quality color prints. Samples of the above products exposed from a similar past color mission [redacted] will be supplied 25X1 for testing in the color system at the customer's facility. Samples will also be supplied of the above products made from targets on a new color acquisition material now in the experimental stages.

c. Tone reproduction diagrams will also be shown and discussed in an effort to describe anticipated results from the upcoming mission.

PLANNED ACTIVITY

6. Continue investigations into the feasibility of employing various production methods utilizing second or third generation color negative and/or positive films. This will include alterations of present products and/or processes in order to improve reproduction of the entire system.

7. Meet with the customer as planned, and establish guidelines for the approach for generating good quality prints.